RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2600

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Michael C. Kautzky	
Appln. No.	:	10/668,437	Confirmation No.: 2388
Filed	:	September 23, 2003	Group Art Unit: 2627
Title	:	MAGNETIC SENSOR WITH ADJUSTABLE ELECTRICAL DIMENSIONS	Examiner: David Donald Davis
Docket No.	:	I69.12-0593	

RESPONSE

Mail Stop AF
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SENT VIA EFS-WEB

This is in response to the Office Action mailed on May 12, 2008, in which claims 1, 3-8, 10-13, 15, 16, and 27-29 were rejected, dependent claims 17-24 were withdrawn from consideration, and claim 14 was objected to but indicated as allowable if rewritten in independent form. The rejection was made final.

Finality of the Office Action

Pursuant to M.P.E.P. § 706.07(c), Applicant requests that the finality of the Office Action of May 12, 2008 be withdrawn as being premature. M.P.E.P. § 706.07(a) States:

> Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims, nor based on information submitted in an information disclosure statement filed during the period set forth in 47 C.F.R. 1.97(c) with the fee set forth in 37 C.F.R. 1.17(p).

The exception applies to this case, and finality of the rejection should be withdrawn.

This application has been the subject of a restriction requirement, two Office Actions with responses, a first request for continued examination, two more Office Actions and responses, a

second request for continued examination, an Office Action, a response, another Office Action made final, a notice of appeal, and a pre-appeal brief request for review. In the decision mailed March 7, 2008, the rejection was withdrawn, and prosecution was reopened.

In the Office Action of May 12, 2008 new rejections were made based upon the Kadokawa U.S. Patent 6,661,627, which had not been cited in any of the previous six Office Actions. The Kadokawa patent issued December 9, 2003, a few months after the present application was originally filed and twenty-one months before the first action on the merits in this application. There was ample time for Kadokawa to be cited during the original prosecution, or either one of the two periods of continued prosecution, so that Applicant could have addressed the Kadokawa patent without being first confronted with that reference after a final rejection.

In the history of this application, twice Applicant's responses following a final rejection have been refused entry. Both refusals precipitated the need for the filing of request for continued examination.

> Before final rejection is in order a clear issue should be developed between the examiner and applicant. To bring the prosecution to as speedy conclusion as possible and at the same time to deal justly by both the applicant and the public, the invention as disclosed and claimed should be thoroughly searched in the first action and the references fully applied; and in reply to this action the applicant should amend with a view to avoiding all the grounds of rejection and objection. Switching from one subject matter to another in the claims presented by applicant in successive amendments, or from one set of references to another by the examiner in rejecting in successive actions claims of substantially the same subject matter, will alike tend to defeat attaining the goal of reaching a clearly defined issue for an early termination, i.e., either an allowance of the application or a final rejection.
>
> While the rules no longer give to an applicant the right to "amend as often as the examiner presents new references or reasons for rejection," present practice does not sanction hasty and ill-considered final rejections. The applicant who is seeking to define his or her invention in claims that will give him or her the patent protection to which he or she is justly entitled should receive the cooperation of the examiner to that end, and not be prematurely cut off in the prosecution of his or her application. But the applicant who dallies in the prosecution of his or her application, resorting to technical or other obvious subterfuges in order to keep the application pending before the primary examiner, can no longer find a refuge in the rules to ward off a final rejection.

> The examiner should never lose sight of the fact that in every case the applicant is entitled to a full and fair hearing, and that a clear issue between applicant and examiner should be developed, if possible, before appeal.

(M.P.E.P. § 706.07).

In this case, the interpretation of the Kadokawa patent stated in the Office Action is in error. In the remainder of this response, Applicant will address the reasons why the Kadokawa patent does not anticipate or render obvious any of the claims of the application. Under the circumstances of this case, fairness requires that Applicant's response to the Office Action be given full consideration, and not be refused consideration because the Office Action of May 12, 2008 was made final at the same time the Kadokawa reference was cited for the very first time.

For these reasons, Applicant requests that the finality of the Office Action of May 12, 2008 be withdrawn.

Rejection of Claims 1, 3, 10-13, 15, and 16

In the Office Action, claims 1, 3, 10-13, 15, 16 were rejected under 35 U.S.C. 102(e) as being anticipated by Kadokawa US Patent 6,661,627.

Independent claim 1 defines a magnetic sensor having a sensor stack and means for generating an electric field in a direction generally transverse to a direction of sense current flow through the sensor stack to create a charge carrier depleted region in the sensor stack such that at least one of (a) the electrical width is smaller than the physical width and (b) the electrical height is smaller than the physical height.

With respect to claim 1, the Office Action states: "Kadokawa shows in figure 3 an arrangement for providing generating an electric field in a direction generally transverse to a direction of sense current flow through a sensor stack 1 to create a charge carrier depleted region in the sensor stack such that at least one of (a) the electrical width 9 is smaller than the physical width and (b) the electric height is small than the physical height."

Element "3" shown in FIGS. 2 and 5 of Kadokawa is identified as a hard magnetic film, not an electrode. It is element 2 that is referred to by Kadokawa as an electrode, but not as a "bias electrode" as required by claim 1. Further, in FIG. 2, reference numeral 1 denotes a magnetic resistance film (an MR film or a spin valve film) which detects a change of a magnetic field from the

magnetic recording medium and obtains a reproducing output, reference numeral 2 denotes an electrode for transmitting a signal of the magnetic resistance film 1, and reference numeral 3 denotes a hard magnetic film which is disposed on both ends of the magnetic resistance film 1 along its longitudinal direction and applies a magnetic field in its longitudinal direction to suppress Barkhausen noise. A material such as NiFe is often used for the magnetic resistance film 1, and a material such as CoCrPt is often used for the hard magnetic film 3.

Kadokawa does not use hard magnetic layers 3 to apply an electric field to sensor stack 1. Rather, current from current generating circuit 5 is delivered through solenoid coils 4 to the two magnetic films 3 located on opposing sides of sensor stack 1. The current applied to solenoid 4 generate a magnetic flux in a longitudinal direction of hard magnetic film 3 to adjust the longitudinal bias magnetic field that is applied by hard magnetic film 3 to sensor stack 1.

A magnetic field is not the same as an electric field. Nor is a current applied to a solenoid the same as a voltage applied to a bias electrode.

Furthermore, the element that Kadokawa identifies as an electrode (element 2) is not used to apply an electric field that creates a charge carrier depleted region in the sensor stack. As stated by Kadokawa at column 4, lines 35-36, reference numeral 2 denotes an electrode "for transmitting a signal of the magnetic resistance film 1." Given the positioning of electrode 2 on opposite sides of stack 1, Kadokawa is showing a current-in-plane (CIP) type sensor stack in which the current flows from one electrode 2 in a generally longitudinal or horizontal direction through sensor stack 1 to the other electrode located on the opposite side of sensor stack 1. Thus, the sense current flowing through stack 1 is in the same direction as the magnetic field being applied in the longitudinal direction by solenoid coils 4 and hard magnetic films 3.

Therefore, Kadokawa fails to disclose the present invention, as defined in independent claim 1 for several reasons. First, it does not generate an electric field create a charge carrier depleted region in the sensor stack. Instead, Kadokawa generates a magnetic field. Second, it does not generate an electric field in a direction generally transverse to a direction of sense current flow through the sensor stack. Even if the magnetic field of Kadokawa were instead an electric field, it is

in the same direction as the sense current flow between electrodes 2 located on opposite sides of sensor stack 1- - not generally transverse to the direction of sense current flow.

Dependent claim 3 further states that the means for providing an electric field comprises two bias electrodes disposed on opposing sides of the sensor stack such that the electrical width of the sensor stack is a function of a bias voltage applied to the two bias electrodes. With respect to claim 3, the Office Action states: "the arrangement for providing an electric field comprises two bias electrodes 3 disposed on opposing sides of the sensor stack 1 such that the electrical width 9 of the sensor stack 1 is a function of a bias voltage applied to the two bias electrodes 3". Kadokawa also fails to disclose two bias electrodes to which a bias voltage is applied, as required by claim 3. Instead, Kadokawa teaches two hard magnetic films and two coils, with currents supplied to the coils to generate magnetic fields (not electric fields).

Dependent claim 10 states that the means for providing an electric field comprises a bias electrode positioned such that the electrical height of the sensor stack is a function of a bias voltage applied to the bias electrode. With respect to claim 10, the Office Action again refers to "bias electrode 3" of Kadokawa. There also is no disclosure in Kadokawa of a bias electrode for providing an electric field to control electrical height of the sensor stack as a function of a bias voltage, as required by claim 10. Kadokawa does not disclose bias electrodes, bias voltage, or electric field for controlling electrical height of a sensor.

The arguments in the Office Action with respect to independent claim 11 and dependent claims 13, 15 and 16 fail for the same reasons. Kadokawa does not teach generation of an electric field in a direction generally transverse to direction of sense current flow through the sensor stack, and does not teach the use of an electric field to create a charge carrier depleted region in order to create an electrical width that is smaller than the physical width or an electrical height that is smaller than the physical height of the sensor stack.

Claims 1, 3, 10-13, 15, and 16 are not anticipated by Kadokawa. The rejection under 35 U.S.C. § 102(e) should be reconsidered and withdrawn.

Rejection of Claims 4-6 and 27-29

Claims 4-6 and 27-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kadokawa. Claims 4-6 depend from independent claim 1. As previous discussed, Kadokawa does not teach or suggest the invention, as defined in independent claim 1, or dependent claim 3. The rejection of claims 4-6 should be reconsidered and withdrawn.

Independent claim 27 defines a magnetic sensor having a sensor stack and having at least one electrode configured to generate an electric field generally perpendicular to the direction of sense current flow through the sensor stack to produce a charge carrier deplete region in the magnetic sensor that confines the sense current to a small area in the magnetic sensor. Dependent claims 28 and 29 depend from independent claim 27.

Kadokawa does not teach or suggest the subject matter of claim 27 or dependent claims 28 and 29 for several reasons. First, Kadokawa does not generate an electric field. Rather, it generates a magnetic field (with coils 4). Second, it does not generate a field (either magnetic or electrical) generally perpendicular to sense current flow. In fact, the magnetic field generated by Kadokawa is in the same direction as the sense current flow through the sensor stack. Third, Kadokawa does not teach the creation of a charge carrier depleted region in the magnetic sensor. This charge carrier depleted region is an electrical phenomenon created by an electric field. Kadokawa shows the use of solenoids and hard magnetic films to create magnetic fields, not the use of an electric field to create a charge carrier depleted region in the magnetic sensor.

Independent claim 27 and dependent claims 28 and 29 are neither taught nor suggested by Kadokawa. The rejection under 35 U.S.C. § 103(a) should be withdrawn.

Objection to Claim 14

The Office Action objected to claim 14 as being dependent from a rejected base claim. It indicated that claim 14 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 14 depends from independent claim 11 through dependent claims 12 and 13. Because claim 11 as well as claims 12 and 13 are in condition for allowance, claim 14 is as well.

Withdrawn Claims 17-24

Claims 17-24 all depend directly or indirectly from independent claim 11. These claims have been indicated as withdrawn. However, because independent 11 is in condition for allowance, claims 17-24 are also in condition for allowance. The status of those claims should be changed and they should be allowed.

Conclusion

Claims 1-8, 10-24, and 27-29 are all in condition for allowance. Notice to that effect is requested.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date: August 6, 2008

By: /David R. Fairbairn/

David R. Fairbairn, Reg. No. 26,047
THE KINNEY & LANGE BUILDING
312 South Third Street
Minneapolis, MN 55415-1002
Telephone: (612) 339-1863
Fax: (612) 339-6580

DRF:ks:mdh